

MOLECULAR GEOMETRY LABORATORY

Fill in the spaces below with the appropriate responses:

<u>Compound</u>	<u>Lewis Structure</u>	<u># -Bonds + Lone Pairs</u>	<u>Hybridization</u>	<u>Electronic Geometry</u>	<u>Molecular Geometry</u>	<u>3D Drawing</u>	<u>Polar or Non-polar</u>
-----------------	------------------------	----------------------------------	----------------------	--------------------------------	-------------------------------	-----------------------	-------------------------------



Name:



Name:



Name:

<u>Compound</u>	<u>Lewis Structure</u>	<u># -Bonds + Lone Pairs</u>	<u>Hybridization</u>	<u>Electronic Geometry</u>	<u>Molecular Geometry</u>	<u>3D Drawing</u>	<u>Polar or Non-polar</u>
-----------------	------------------------	----------------------------------	----------------------	--------------------------------	-------------------------------	-----------------------	-------------------------------

BrF₃

Name:

SO₄²⁻

Name:

TeCl₄

Name:

H₃O⁺

Name:

<u>Compound</u>	<u>Lewis Structure</u>	<u># -Bonds + Lone Pairs</u>	<u>Hybridization</u>	<u>Electronic Geometry</u>	<u>Molecular Geometry</u>	<u>3D Drawing</u>	<u>Polar or Non-polar</u>
-----------------	------------------------	----------------------------------	----------------------	--------------------------------	-------------------------------	-----------------------	-------------------------------

CO₂

Name:

NO₂⁻

Name:

ICl₄⁻

Name:

SbCl₅

Name:

<u>Compound</u>	<u>Lewis Structure</u>	<u># -Bonds + Lone Pairs</u>	<u>Hybridization</u>	<u>Electronic Geometry</u>	<u>Molecular Geometry</u>	<u>3D Drawing</u>	<u>Polar or Non-polar</u>
-----------------	------------------------	----------------------------------	----------------------	--------------------------------	-------------------------------	-----------------------	-------------------------------

GaI₃

Name:

XeF₄

Name:

SeCl₄

Name:

ClF₅

Name:

<u>Compound</u>	<u>Lewis Structure</u>	<u># -Bonds + Lone Pairs</u>	<u>Hybridization</u>	<u>Electronic Geometry</u>	<u>Molecular Geometry</u>	<u>3D Drawing</u>	<u>Polar or Non-polar</u>
COCl ₂							
Name:							
NO ₃ ⁻							
Name:							
CH ₃ CH ₂ CH ₂ OH							
1-Propanol							
Geometry about O							
C ₆ H ₆							
Benzene							
Geometry about one of the C's							

MOLECULAR GEOMETRIES

<u>Molecule</u>	<u># -Bonds + Lone Pairs</u>	<u>Hybridization</u>	<u>Electronic Geometry</u>	<u>Molecular Geometry</u>	<u>Examples</u>	<u>Bond Angles</u>
AB ₂	2	sp	Linear	Linear	BeCl ₂ , CO ₂	180°
AB ₃	3	sp ²	Trigonal Planar	Trigonal Planar	BF ₃ , AlCl ₃	120°
AB ₂ E	3	sp ²	Trigonal Planar	Bent	NO ₂	<120°
AB ₄	4	sp ³	Tetrahedral	Tetrahedral	CH ₄ , CCl ₄	109.5°
AB ₃ E	4	sp ³	Tetrahedral	Trigonal Pyramidal	NH ₃ , PCl ₃	<109.5°
AB ₂ E ₂	4	sp ³	Tetrahedral	Bent	H ₂ O, H ₂ S	<109.5°
AB ₅	5	sp ³ d	Trigonal Bipyramidal	Trigonal Bipyramidal	PCl ₅ , AsF ₅	90, 120, 180°
AB ₄ E	5	sp ³ d	Trigonal Bipyramidal	See-saw	SF ₄ , SeCl ₄	90, 120, 180°
AB ₃ E ₂	5	sp ³ d	Trigonal Bipyramidal	T-shaped	ClF ₃	90, 180°

<u>Molecule</u>	<u># -Bonds + Lone Pairs</u>	<u>Hybridization</u>	<u>Electronic Geometry</u>	<u>Molecular Geometry</u>	<u>Examples</u>	<u>Bond Angles</u>
AB ₂ E ₃	5	sp ³ d	Trigonal Bipyramidal	Linear	XeF ₂	180°
AB ₆	6	sp ³ d ²	Octahedral	Octahedral	SF ₆	90, 180°
AB ₅ E	6	sp ³ d ²	Octahedral	Square Pyramidal	BrF ₅ , IF ₅	90, 180°
AB ₄ E ₂	6	sp ³ d ²	Octahedral	Square Planar	XeF ₄	90, 180°

Note: **A** represents the central atom.

B represents atoms attached to the central atom.

E represents lone pairs of electrons on the central atom.